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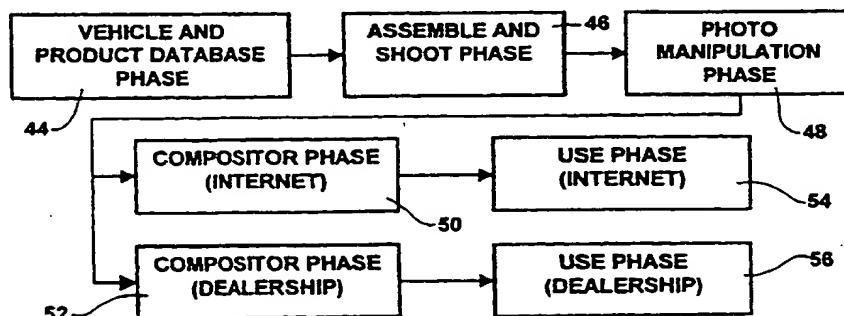
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(54) Title: **COMPUTERIZED VISUALIZING OF VEHICLES WITH CUSTOM ACCESSORIES**



INTERACTIVE VEHICLE PROCESS OVERALL FLOW

(57) Abstract: A visualization system for enabling a user to select a vehicle and to overlay images of various user-selected accessories (50 and 52) onto an image of a vehicle to display an image of the desired combination includes a database (44) that stores digitized images of various vehicles and accessories. The accessories can be photographed separately (46) so that it is not necessary to photograph an accessorized vehicle for each one of the potentially thousands of vehicle/accessory combinations. The database (44) correlates accessories and colors, with prices and other data to the vehicles. An user can access the database over the Internet to select a vehicle with user-defined accessories, and then a composite image of the vehicle with accessories is presented (54). Or, a salesperson in a dealership can access a local database of vehicles/accessories to display, on a monitor in the showroom, a composite photograph of a vehicle with a buyer-defined suite of accessories (54), such that the buyer can visualize the desired vehicle/accessory combination even if an actual vehicle with the accessory suite is not on the lot.

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COMPUTERIZED VISUALIZING OF VEHICLES WITH CUSTOM ACCESSORIES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to accessorizing vehicles, and more particularly to systems and methods for visualizing, using computers, vehicles with accessories.

2. Description of the Related Art

Accessories can be added to most stock vehicles to enhance either the appearance or performance of the vehicles. Included in the term "accessories" are certain stock items. Also included in the term "accessories" are add-on parts that are made by the vehicle manufacturer, as well as add-on parts that are made by original equipment manufacturers (OEMs) and sold by car dealers.

As an example, a vehicle manufacturer might make a "sport" package available on a particular model, with the "sport" package including one or more aesthetically pleasing external components such as sport mirrors, flared fenders, and the like. Such accessories ordinarily are "added on" at the vehicle factory, although many vehicle manufacturer accessories can be bought by a consumer at a dealership. In contrast, an OEM might make floorboards for pickup trucks that can fit several vehicle models, as well as, e.g., front hood bras, and indeed a plethora of other accessories that are sold at the dealership.

In any case, a car buyer potentially has dozens, perhaps hundreds, of combinations of accessories from which to select. Unfortunately, as recognized by the present invention only a few of these combinations are likely to be embodied in a single vehicle package at any given time on a dealer showroom. Consequently, the present invention understands that a buyer must resort to imagining what a particular combination of accessories might look like. As further understood herein, it would be desirable from both a buyer's viewpoint and a dealer's viewpoint to provide a means by which a buyer can quickly visualize many combinations of accessories for many models.

As still further recognized herein, such a large number of accessories are available, and ordinarily in many buyer-selectable colors, that simply photographing sample vehicles having all the possible combinations of accessories and color schemes is impractical. Fortunately, the

present invention has carefully considered the problems noted above, and has provided the solutions below to one or more of the noted problems.

SUMMARY OF THE INVENTION

The invention is a general purpose computer programmed according to the inventive steps herein to visualize a vehicle accessorized per a user's selection. The invention can also be embodied as an article of manufacture - a machine component - that is used by a digital processing apparatus and which tangibly embodies a program of instructions that are executable by the digital processing apparatus. This invention can be realized in a critical machine component that causes a digital processing apparatus to perform the inventive method steps herein. Also, the method includes flow process steps at least some of which can be undertaken by a computer.

In accordance with the present invention, the method for visualizing a vehicle includes photographing at least one vehicle to render a vehicle photograph. Also, the method includes photographing at least one accessory separately from the vehicle to render an accessory photograph, it being understood that the accessory is intended for use on the vehicle. The photographs are digitally stored and subsequently accessed such that, in response to a user-defined accessory combination, the accessory photograph can be superimposed onto the vehicle photograph on a computer display. With this invention, the accessory combination can be visualized.

In a preferred embodiment, a color from a database of colors that is associated with the vehicle can be defined. The vehicle photograph is characterized by the color. Preferably, plural digital photographs of respective accessories that are associated with the vehicle are rendered. Indeed, the number of accessories so displayed can be greater than eight.

As set forth in greater detail below, the accessory can be positioned on a rack in a position on the rack corresponding to the intended position of the accessory on a vehicle, prior to photographing the accessory. Also, one or more vehicle coordinates are correlated to respective locations on a photograph area, such that the accessory is positioned on the rack in accordance with the coordinates.

In any event, the digitally stored photographs can be made available on a wide area computer network, such that a computer communicating with the network can undertake the superimposing act. Or, the digitally stored photographs can be made available on a local area computer network of a vehicle dealer. In this embodiment, the user-defined accessory combination is defined by a potential buyer and can be communicated (orally or otherwise) to a

seller, such that the seller can communicate with the local area network and present the vehicle with accessory on a computer display located at the vehicle dealer.

In another aspect, a computer-implemented method for promoting the selling of a vehicle includes receiving, from a buyer at a vehicle dealership, a user-defined accessory combination including at least one vehicle, at least one color thereof, and at least one accessory related thereto. The accessory is selected from a group of accessories numbering greater than eight. A database that is located at the vehicle dealership is accessed to retrieve digital photographs representative of the vehicle and accessory, and then the photograph of the accessory is presented on a computer display located at the vehicle dealership. A photograph of the vehicle is also presented on the computer display along with the photograph of the accessory, to promote a sale of the vehicle with accessory.

In still another aspect, a computer-implemented method is disclosed for permitting a user of a wide area computer network to visualize a vehicle having a user-defined accessory combination. The method includes storing digital photographs in a database that is accessible to the user via the wide area network. As intended by the present invention, the photographs include at least one vehicle photograph and at least one accessory photograph, both of which are associated with at least one respective vehicle identification. Furthermore, the method includes receiving the user-defined accessory combination at a computer associated with the database. In response to the user-defined accessory combination, the accessory photograph is superimposed onto the vehicle photograph such that an image of the vehicle with accessory can be presented on a monitor of the user.

In another aspect of the present invention, a computer program product is disclosed which is readable by a digital processing apparatus and which tangibly embodies a computer program. The computer program product combines a computer readable medium with program code elements that undertake the above method.

The details of the present invention, both as to its structure and operation, can best be understood in reference to the accompanying drawings, in which like reference numerals refer to like parts, and in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic diagram of the present invention embodied in an Internet-based system;

Figure 2 is a schematic diagram of the present invention embodied in a dealership-based system;

Figure 3 is a flow chart of the overall method acts;

Figure 4 is a flow chart of the database creation phase;

Figure 5 is a flow chart of the assembly and photography phase;

Figure 6 is a flow chart of the photograph manipulation phase;

5 Figure 7 is a flow chart of the compositor phase for the Internet-based system;

Figure 8 is a schematic diagram of a file structure related to the compositor phase shown in Figure 7;

Figure 9 is a flow chart of the compositor phase for the dealership-based system;

10 Figure 10 is a schematic diagram of a file structure related to the compositor phase shown in Figure 9;

Figure 11 is a diagram of the use phase for the Internet-based system, showing both physical entities and logical steps undertaken in connection with the physical entities; and

Figure 12 is a diagram of the use phase for the dealership-based system, showing both physical entities and logical steps undertaken in connection with the physical entities.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring initially to Figure 1, an Internet-based system for visualizing vehicles with user-defined accessory suites is shown, generally designated 10. In the particular architecture shown, the system 10 includes a digital processing apparatus, such as a user's home computer 12. In one intended embodiment, the computer 12 may be a personal computer made by
20 International Business Machines Corporation (IBM) of Armonk, N.Y. as shown, or the computer 12 may be any computer, including a laptop or palmtop computer or indeed a mini-computer or even a mainframe.

The computer 12 includes a computer network browser 14 which, like the other software disclosed herein, may be executed by a processor within a computer (e.g., the computer 12) as
25 a series of computer-executable instructions. These instructions may reside, for example, in RAM of the computer 12.

Alternatively, the instructions may be contained on a data storage device with a computer readable medium, such as a computer diskette. Or, the instructions may be stored on a DASD array, magnetic tape, conventional hard disk drive, electronic read-only memory, optical storage
30 device, or other appropriate data storage device.

Figure 1 also shows that the system 10 can include peripheral computer equipment known in the art, including an output device such as a video monitor 16 and an input device such as a computer keyboard 18. Other output devices can be used, such as printers, other computers,

and so on. Likewise, input devices other than the keyboard 18 can be used, e.g., a mouse, or trackballs, keypads, touch screens, and voice recognition devices.

The browser 14 communicates with a Web server 20 via the Internet 22, as shown in Figure 1, to enable a user of the computer 12 to visualize a vehicle having accessories as defined by the user, in accordance with the detailed discussion below. To this end, the Web server 24 includes a software-implemented visualization module 24 that executes certain logic set forth further below. In undertaking the logic, the module 24 accesses a vehicle and accessory database 26, preferably at the Web server 20.

Alternatively, the present vehicle visualization features can be provided in a dealership setting, as shown in Figure 2. More particularly, a visualization system 28 can be provided on the premises of a vehicle dealership 30. The system 28 shown in Figure 2 can include one or more salesman's computers 32 with associated monitor 34 and input device 36, with the salesman's computers 32 communicating with a server computer 38 via a local area network (LAN) 40. In undertaking the logic, the server 38 accesses a vehicle and accessory database 42, preferably located at the dealership 30 but alternatively accessible off-site via the Internet. When located at the dealership 30, the database 42 can be updated via the Internet if desired.

The flow charts below illustrate logic at least some of which is undertaken by one or more computers. Commencing with the overall process flow shown in Figure 3, at block 44 a vehicle and product database assembly phase is undertaken, as more fully discussed below in reference to Figure 4.

After creating the databases, the overall process flow moves to block 46 to undertake a vehicle, and accessory assembly and photographic shoot phase, as discussed below in relation to Figure 5. Then, the overall flow moves to block 48 to undertake a photographic manipulation phase, as set forth in greater detail with reference to Figure 6.

After photographing the vehicles and accessories, the flow proceeds to block 50 to undertake a compositor phase in the case of the Internet-based system 10 shown in Figure 1. Details of the processes at block 50 are shown in Figures 7 and 8. In contrast, the compositor phase is undertaken at block 52 in the case of the dealership-based system 28 shown in Figure 2. Details of the processes at block 52 are shown in Figures 9 and 10. Internet-based system 10 use phase steps are then undertaken at block 54, whereas dealership-based system 28 use phase steps are undertaken at block 56. Details of the use phase of the present invention are shown in Figures 11 and 12.

The vehicle and product database phase is shown in Figure 4. Commencing at block 58, vehicle data is imported from available sources. Specifically, vehicle makes, models, body

styles, and colors are identified and entered into a database at block 58. Next, at step 60, visually distinct groups are identified. Stated differently, the database technician groups various vehicle models by body type, it being recognized that more than one model might share a common body type or style. Representative body styles for model groups are then selected by the technician at step 62.

In parallel with the vehicle data importation, at block 64 the manufacturer's part numbers for accessories of interest are obtained and input into the database. Then, at step 66, the part numbers are mapped or otherwise associated with the vehicle body styles with which they are intended for use. This data typically is obtained from the accessory manufacturer, not the vehicle manufacturer, and accordingly the association at step 66 represents a significant and valuable data correlation step.

Once available accessories and vehicle body styles have been input into the database, some or all of the vehicles and accessories are selected at block 68 for imaging. Proceeding to decision diamond 70, it is decided, for each vehicle and accessory selected at block 68, whether a photograph of the vehicle or accessory already exists in a photograph library that might have been previously generated. If a photograph exists, it is copied to a computer-stored graphics folder at block 72 and then listed in a database catalogue at step 74. On the other hand, if no photo exists, the process flow moves to block 76, wherein the vehicle or accessory is ordered for photographing. At block 78, the product (i.e., the vehicle or accessory) is transported to a photographic studio for photography as described further below.

Figure 5 shows the assembly and photographic shoot phase for both vehicles and accessories. Commencing at block 80 in the case of vehicles, a vehicle to be photographed is positioned on a photographic platform and its position and orientation relative to a camera at a fixed location is measured and documented. In other words, the position of the vehicle on the platform is recorded, preferably by physically marking the platform and recording the position in a log. Thus, vehicle coordinates are correlated to corresponding locations on the platform.

Moving to block 82, the vehicle is assembled with certain accessories, if desired. As set forth further below, at block 82 only one vehicle with one suite of accessories need be provided and photographed for each body style, because additional accessories are photographed separately for subsequent composition with vehicle photographs. At block 84, the vehicle is digitally photographed. Next, at block 86 a naming convention is applied to each "scan" (i.e., to each photograph). In the preferred embodiment, the naming convention includes the identification of the accessories on the vehicle ("PID"), the vehicle identification ("VID"), and a

plain text product description. The photograph with name is then copied to the graphics folder at block 88.

5 The photography process commences at block 90 in the case of additional accessories that can be supplied for the vehicle photographed at block 84. For each additional accessory, the accessory is positioned on a frame or rack in a position on the rack corresponding to the intended position of the accessory on a vehicle. i.e., in the same position on the rack as the accessory would otherwise occupy on the vehicle. Next, the rack is positioned on the platform at block 92 in accordance with the vehicle measurements undertaken at block 80. The position of each accessory on the rack is noted as an offset position from a reference point, e.g., the bottom left
10 corner of the rack..

It may now be appreciated that after block 92, the accessory occupies the same volume of space it would have occupied had it been mounted on the vehicle during photography of the vehicle at block 84. Thus, with a camera at a fixed location, the photograph of the accessory bears the same perspective and scale as it would have, had it been mounted on the vehicle at
15 block 84. In this way, a great many accessories for any given body style can be photographed separately from the vehicle or vehicles with which they are intended for use, thereby obviating the need to obtain a fully accessorized vehicle for each one of potentially hundreds of accessory suites that the vehicle can have.

The accessory or accessories on the rack are photographed at block 94; and at block 96 a
20 naming convention is applied to each "scan" (i.e., to each photograph). In the preferred embodiment, the naming convention includes the identification of the accessories ("PID"), the identifications of the vehicle or vehicles on which the accessories can be used ("VID"), and a plain text product description. The photograph with name is then copied to the graphics folder at block 98.

25 Figure 6 shows the photo manipulation phase. Commencing at block 100 in the case of vehicles, a digital file of the photograph, preferably in .psd format, is opened. Moving to block 102, each accessory that had been mounted on the vehicle during photographing is separated from the image of the vehicle and given its own digital layer with name. Embedded into the digital layers are codes representing the color of the vehicle and of the accessories. Also
30 embedded in the layers are codes representing the PID and VID, derived from the naming conventions applied during the photography phase.

Additionally, at block 104 the vehicle body is separated from all add-on accessories that had been photographed on the vehicle, with the image of the vehicle establishing its own digital photograph layer. This layer likewise has codes embedded in it that represent the VID, PID of

the accessories that pertain to the vehicle, color, and other data as required by the particular application.

Next, at block 106 for each factory color in which the vehicle is available, a copy of the vehicle, image generated at block 104 is made. Likewise, for each accessory layer, a copy is made for each color in which the accessory is available. Proceeding to block 108, the layers are colored with the respective colors and retouched as necessary. Each layer is saved using the above-described naming convention at block 110.

In the case of accessories that have been photographed on racks separately from a vehicle, commencing at block 112 a digital file of the photograph, preferably in .psd format, is opened. Moving to block 114, using the VID that accompanies the image of the accessory, a vehicle image is associated with the accessory. After obtaining the vehicle image, the process moves to block 116, wherein the image of the accessory is outlined and retouched as necessary such that the accessory better "fits" the image of the vehicle. At this point, the image of the accessory can be overlaid on the image of the vehicle as required, but a composite image of the vehicle with accessory is not yet stored.

At block 118 for each factory color in which the vehicle is available, a copy of the vehicle layer is made, if not already undertaken at block 106 above. Likewise, for each accessory layer, a copy is made for each color in which the accessory is available. Proceeding to block 120, the layers are colored with the respective colors and retouched as necessary. Each layer is saved using the above-described naming convention at block 122.

Figures 7 and 8 further illustrate the principles set forth above by showing the compositor phase used by the Internet-based system 10 shown in Figure 1. In Figure 7, assume for illustration that a single vehicle having three body colors is associated with four accessories numbered 1-4, with accessory #1 being available in three colors and accessory nos. 2-4 being available in one color each.

State 124 represents the layered .psd file generated by the process in Figure 6. This .psd file is sent to a software-implemented compositor 126, which creates, for each layer, an individual file having the format discussed below. Thus, the compositor 126 generates a file system, generally designated 127. In the figures, these files are designated "ICI" files. With the above example in mind, the three copies of the vehicle image layer (one for each color) are transformed into three respective vehicle image files 128, 130, 132. Similarly, the layers for the one-color accessories 2-4 are transformed into respective accessory files 134, 136, 138. Recall, however, that accessory #1 comes in three colors. Accordingly, three separate accessory #1 files 140, 142, 144, one for each color, are created by the compositor 126.

Figure 8 shows the structure of each of the files created by the compositor 126. As shown, each file includes a compression field 146, indicating whether a data compression scheme, if any, is used. Also, each file includes a size field 148, indicating the size of the image represented by the file. Moreover, each file includes an offset position 150, indicating the offset of, e.g., a separately photographed accessory relative to the reference point on the above-discussed rack. Moreover, each file includes image data 154, preferably in RGBA format known in the art. And, each file includes a file name 156 that is derived from the VID/PID discussed above.

The present invention understands that in contrast to the relatively large computing power of a typical Web server computer, an in-dealership server computer might have only the computing power of a PC-based workstation. Accordingly, the compositor phase shown in Figures 9 and 10 for the in-dealership system 28 of Figure 2 generates relatively compact files, compared to the files described above for the Internet-based system 10.

For illustration purposes, Figure 9 assumes that a layered image file 158 of one vehicle with three colors and three accessories, two accessories having only one color and one accessory having three colors, is provided to a software-implemented compositor 160 to create a file system, generally designated 161. The compositor 160 generates at least two files for each layer. More specifically, in the case of the vehicle, the compositor 160 generates a single file 162 in .png format, containing information regarding image opacity, positional data, and transparency data, as indicated in Figure 10. Furthermore, for each one of the three vehicle colors, the compositor 160 generates three respective image files 164, 166, 168 in, e.g., .jpg format. In accordance with .jpg format principles, the image files 164, 166, 168 contain image information in RGB (red-green-blue) format, as indicated in Figure 10.

In contrast, for the first single-color accessory layer, the compositor 160 generates a respective .png file 170 and a .jpg-formatted image file 172. Likewise, for the second single-color accessory layer, the compositor 160 generates a respective .png file 174 and a .jpg-formatted image file 176. However, for the accessory having three color layers, the compositor 160 generates a single .png file 178 and three .jpg-formatted image files 180, 182, 184, one for each color. It is to be understood that the colors represented by the files are embedded in the names of the files.

The use of the Internet-based system 10 can be seen in cross-reference to Figures 1 and 11. As shown, the Web server 20 accesses the file system 127 and database 26 in response to user inputs for requested vehicles with user-determined accessories thereon. More specifically, using the input device 18 shown in Figure 1, a user of the computer 12 can select a particular

vehicle model, as indicated at 188 in Figure 11, and the user can also specify accessories for the vehicle, as indicated at 190 in Figure 11. The user also selects the colors for the vehicle and accessories. Thus, the user specifies an accessory combination. This information is sent via the user's browser 14 to the Web server 20. In response, the Web server 20 communicates, via the Internet 22, a composite image of the vehicle with accessories, for display on the monitor 16. It is to be appreciated that the user computer 12 is essentially a "thin client", requiring only a commercially available browser to undertake its part of the present visualization process.

Further details of the Web server 20 are shown in Figure 11. The user-defined vehicle and accessory selections are sent to an active server pages (ASP) engine 192 at the Web server 20. The ASP engine 192 correlates the user-selected accessories and vehicle to corresponding PIDs and VIDs, using the database 26. With this information, the ASP engine 192 accesses a digital image management engine (DIME) 194. More specifically, in the preferred embodiment the ASP engine 192 sends one selection (e.g., vehicle type, or accessory type, with color as specified by the user) at a time to the DIME 194, and the DIME 194 in response fetches the appropriate one of the ICI files in the files system 127.

After fetching one ICI file, the DIME 194 awaits instruction from the ASP engine 192 as to what file to fetch next, and the DIME 194 continues to fetch the files, one at a time, overlaying them on one another using the offset fields 150. Effectively, the DIME 194 superimposes photographs of the user-defined accessories onto a photograph of the user-defined vehicle for subsequent display of the composite image on a computer display, such that the accessory combination can be visualized.

When all files have been fetched, the ASP 192 commands the DIME 194 to output the composite image, which the ASP 192 sends back to the user computer 12 via the Internet 22 for display of the image on the monitor 22.

Now referring to Figures 2 and 12, the use phase of the dealership system 28 can be seen. A browser 196 of the salesman's computer 32 preferably is used as a user interface for requesting and displaying images of accessorized vehicles as indicated at state 198. A buyer at the vehicle dealership 30 can communicate to the salesman user of the computer 32 a user-defined accessory combination including a vehicle, one or more, and indeed greater than eight, accessories, with desired colors. Using the input device 36 shown in Figure 2, the salesman-user communicates the requested composite to the server 38.

In accordance with browser principles known in the art, the request is formatted into a request for .png/.jpg file pairs, as indicated at 200 in Figure 12. Also, the request is formatted by the browser into an XML (or HTML) recordset request, as indicated at 202 in Figure 12.

These requests are communicated via the LAN 40 to the server 38. In response, the server 38 accesses the database 42 and file system 161 to retrieve the recordsets and image pairs, respectively. The data is returned to the browser 196, with the image of the vehicle, as accessorized by the user, being displayed on the monitor 34 (Figure 2). As indicated in Figure 12, client interface components are delivered via .cab files when the salesman's computer 32 first establishes communication with the server 38, in accordance with browser principles known in the art.

While the particular SYSTEM AND METHOD FOR VISUALIZING VEHICLES WITH ACCESSORIES as herein shown and described in detail is fully capable of attaining the above-described objects of the invention, it is to be understood that it is the presently preferred embodiment of the present invention and is thus representative of the subject matter which is broadly contemplated by the present invention, that the scope of the present invention fully encompasses other embodiments which may become obvious to those skilled in the art, and that the scope of the present invention is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean "one and only one" unless explicitly so stated, but rather "one or more". All structural and functional equivalents to the elements of the above-described preferred embodiment that are known or later come to be known to those of ordinary skill in the art are expressly incorporated herein by reference and are intended to be encompassed by the present claims. Moreover, it is not necessary for a device or method to address each and every problem sought to be solved by the present invention, for it to be encompassed by the present claims. Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims. No claim element herein is to be construed under the provisions of 35 U.S.C. §112, sixth paragraph, unless the element is expressly recited using the phrase "means for".

CLAIMS

1. A method for visualizing a vehicle, comprising the acts of:
photographing at least one vehicle to render a vehicle photograph;
photographing at least one accessory separately from the vehicle to render an
5 accessory photograph, the accessory being intended for use on at least the vehicle;
digitally storing the photographs;
accessing the digitally stored photographs; and
in response to a user-defined accessory combination, superimposing the accessory
photograph onto the vehicle photograph on a computer display, whereby the accessory
10 combination can be visualized.
2. The method of Claim 1, further comprising the act of defining a color from a
database of colors associated with the vehicle, and causing the vehicle photograph to be
characterized by the color.
3. The method of Claim 2, further comprising the act of rendering plural digital
15 photographs of respective accessories, all being associated with the vehicle.
4. The method of Claim 3, wherein the number of accessories is greater than eight.
5. The method of Claim 1, further comprising the act of positioning the accessory on
a rack in a position on the rack corresponding to the intended position of the accessory on a
vehicle, prior to photographing the accessory.
- 20 6. The method of Claim 1, further comprising making the digitally stored
photographs available on a wide area computer network, whereby a computer communicating
with the network can undertake the superimposing act.
7. The method of Claim 1, further comprising making the digitally stored
photographs available on a local area computer network of a vehicle dealer, wherein the user-
25 defined accessory combination is defined by a potential buyer and communicated to a seller;

such that the seller can communicate with the local area network and present the vehicle with accessory on a computer display located at the vehicle dealer.

8. The method of Claim 5, further comprising the act of correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

9. The method of Claim 1, wherein each photograph is associated with at least one vehicle identification.

10. A computer-implemented method for promoting the selling of a vehicle, comprising the acts of:

10 receiving, from a buyer at a vehicle dealership, a user-defined accessory combination including at least one vehicle, at least one color thereof, and at least one accessory related thereto, the accessory being selected from a group of accessories numbering greater than eight and related to the vehicle;

15 accessing a database located at the vehicle dealership to retrieve therefrom digital photographs representative of the vehicle and accessory;

causing the photograph of the accessory to be presented on a computer display located at the vehicle dealership; and

20 causing the photograph of the vehicle to be presented on the computer display along with the photograph of the accessory, to promote a sale of the vehicle with accessory.

11. The method of Claim 10, further comprising the acts of:

photographing the vehicle to render a vehicle photograph;

photographing at least one accessory separately from the vehicle to render an accessory photograph; and

25 digitally storing the photographs in the database located at the dealership.

12. The method of Claim 11, further comprising the act of defining a color from a database of colors associated with the vehicle, and causing the vehicle photograph to be characterized by the color.

13. The method of Claim 12, further comprising the act of rendering plural digital photographs of respective accessories, all being associated with the vehicle.

14. The method of Claim 13, further comprising the act of positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on the vehicle, prior to photographing the accessory.

15. The method of Claim 14, further comprising the act of correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

16. The method of Claim 10, wherein each photograph is associated with at least one vehicle identification.

17. A computer-implemented method for permitting a user of a wide area computer network to visualize a vehicle having a user-defined accessory combination, comprising the acts of:

storing digital photographs in a file system or other database accessible to the user via the wide area network, the photographs including at least one vehicle photograph and at least one accessory photograph, the photographs being associated with at least one respective vehicle identification;

receiving the user-defined accessory combination at a computer associated with the database; and

in response to the user-defined accessory combination, superimposing the accessory photograph onto the vehicle photograph such that a display of the vehicle with accessory can be presented on a monitor of the user.

18. The method of Claim 17, further comprising the act of defining a color from a database of colors associated with the vehicle, and causing the vehicle photograph to be characterized by the color.

19. The method of Claim 17, further comprising the act of rendering plural digital photographs of respective accessories, all being associated with the vehicle.

20. The method of Claim 19, wherein the number of accessories is greater than eight.

21. The method of Claim 17, further comprising the act of positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on a vehicle, prior to photographing the accessory.

5 22. The method of Claim 21, further comprising the act of correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

23. A computer program device comprising:

a computer program storage device readable by a digital processing apparatus; and

10 a program means on the program storage device and including instructions executable by the digital processing apparatus for performing method acts for promoting the selling a vehicle, the method acts comprising:

receiving, from a buyer at a vehicle dealership, a user-defined accessory combination including at least one vehicle, at least one color thereof, and at least one
15 accessory related thereto, the accessory being selected from a group of accessories numbering greater than eight and related to the vehicle;

accessing a database located at the vehicle dealership to retrieve therefrom digital photographs representative of the vehicle and accessory;

20 causing the photograph of the accessory to be presented on a computer display located at the vehicle dealership; and

causing the photograph of the vehicle to be presented on the computer display along with the photograph of the accessory, to promote a sale of the vehicle with accessory.

25 24. The computer program product of Claim 23, wherein the method acts further comprise:

photographing the vehicle to render a vehicle photograph;

photographing at least one accessory separately from the vehicle to render an accessory photograph; and

digitally storing the photographs in the database located at the dealership.

25. The computer program product of Claim 23, wherein the method acts further comprise rendering plural digital photographs of respective accessories, all being associated with the vehicle, the accessory being selected from a group of accessories numbering greater than eight and related to the vehicle.

5 26. The computer program product of Claim 23, wherein the method acts further comprise positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on the vehicle, prior to photographing the accessory.

10 27. The computer program product of Claim 26, wherein the method acts further comprise correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

28. A computer program device comprising:

a computer program storage device readable by a digital processing apparatus; and

15 a program means on the program storage device and including instructions executable by the digital processing apparatus for performing method acts for permitting a user of a wide area computer network to visualize a vehicle having a user-defined accessory combination, the method acts comprising:

20 storing digital photographs in a database accessible to the user via the wide area network, the photographs including at least one vehicle photograph and at least one accessory photograph, the photographs being associated with at least one respective vehicle identification;

receiving the user-defined accessory combination at a computer associated with the database; and

25 in response to the user-defined accessory combination, superimposing the accessory photograph onto the vehicle photograph such that a display of the vehicle with accessory can be presented on a monitor of the user.

29. The computer program product of Claim 28, wherein the method acts further comprise rendering plural digital photographs of respective accessories, all being associated with the vehicle, wherein the number of accessories is greater than eight.

30. The computer program product of Claim 28, wherein the method acts further comprise:

positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on a vehicle, prior to photographing the accessory; and

5 correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

31. The computer program product of Claim 23, in combination with a computer system. The computer program product of Claim 28, in combination with a computer system.

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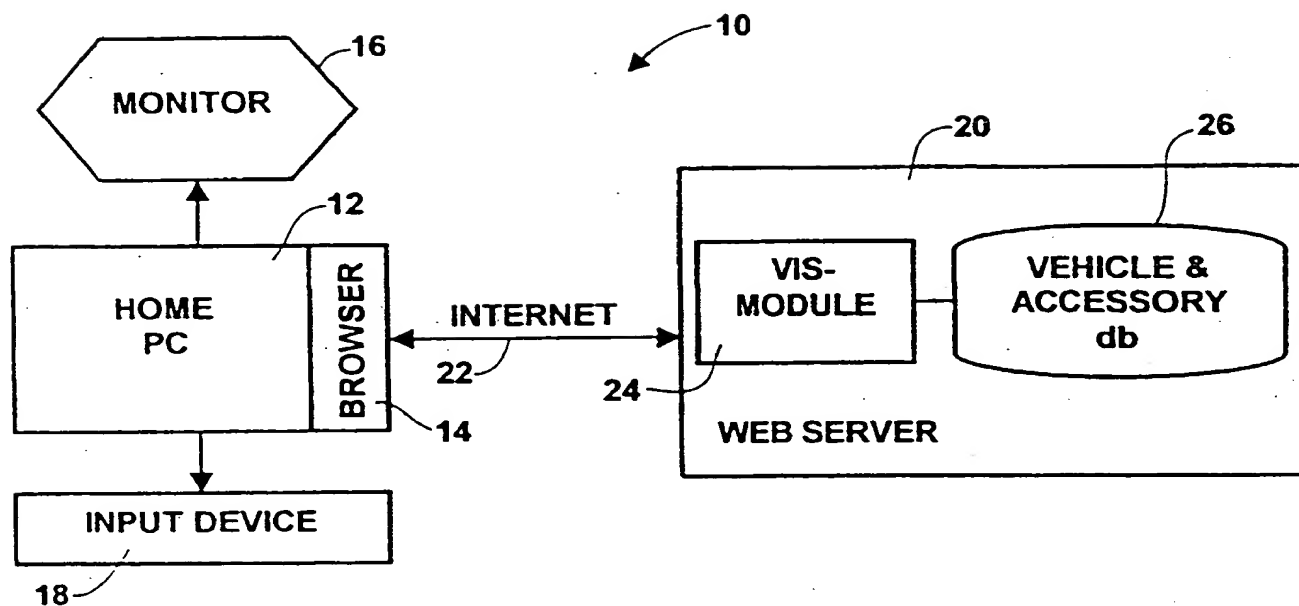


FIG. 1 - INTERNET SYSTEM

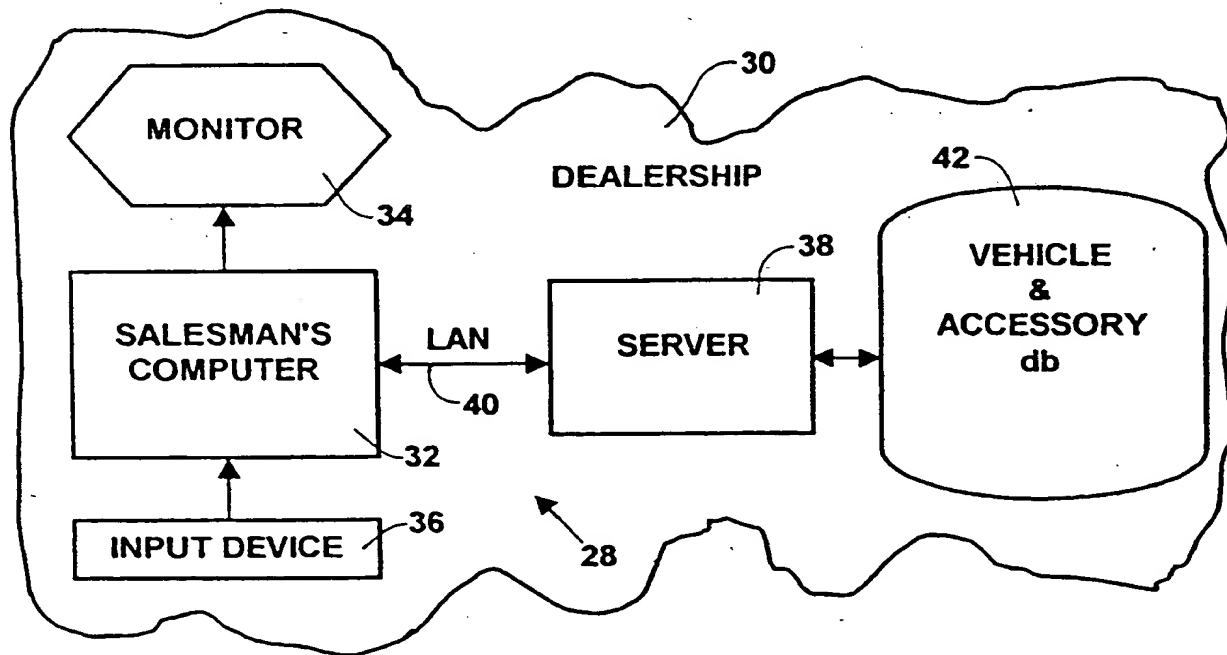


FIG. 2 - DEALERSHIP SYSTEM

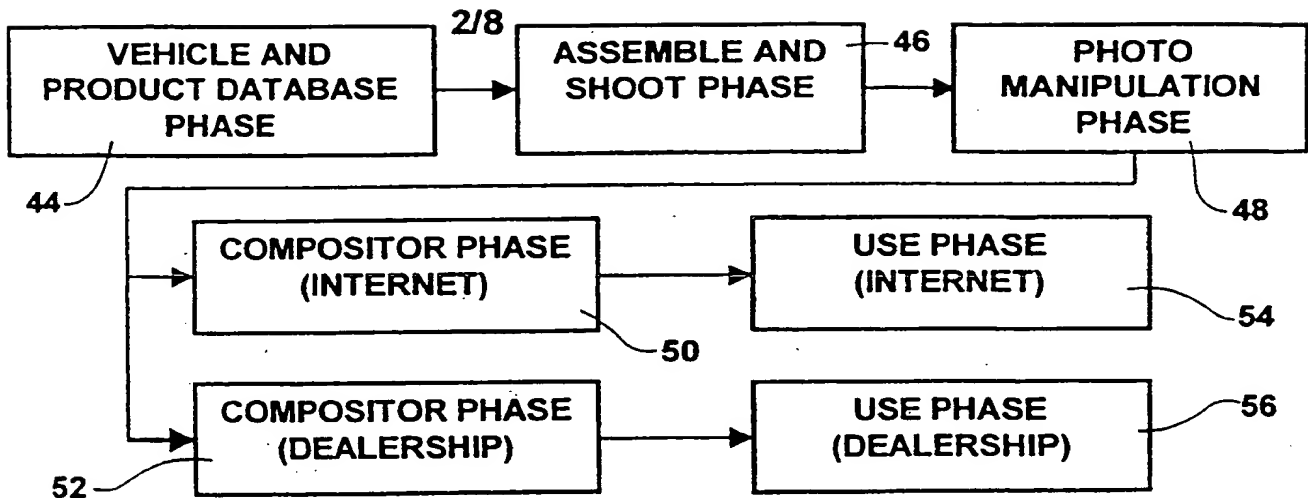
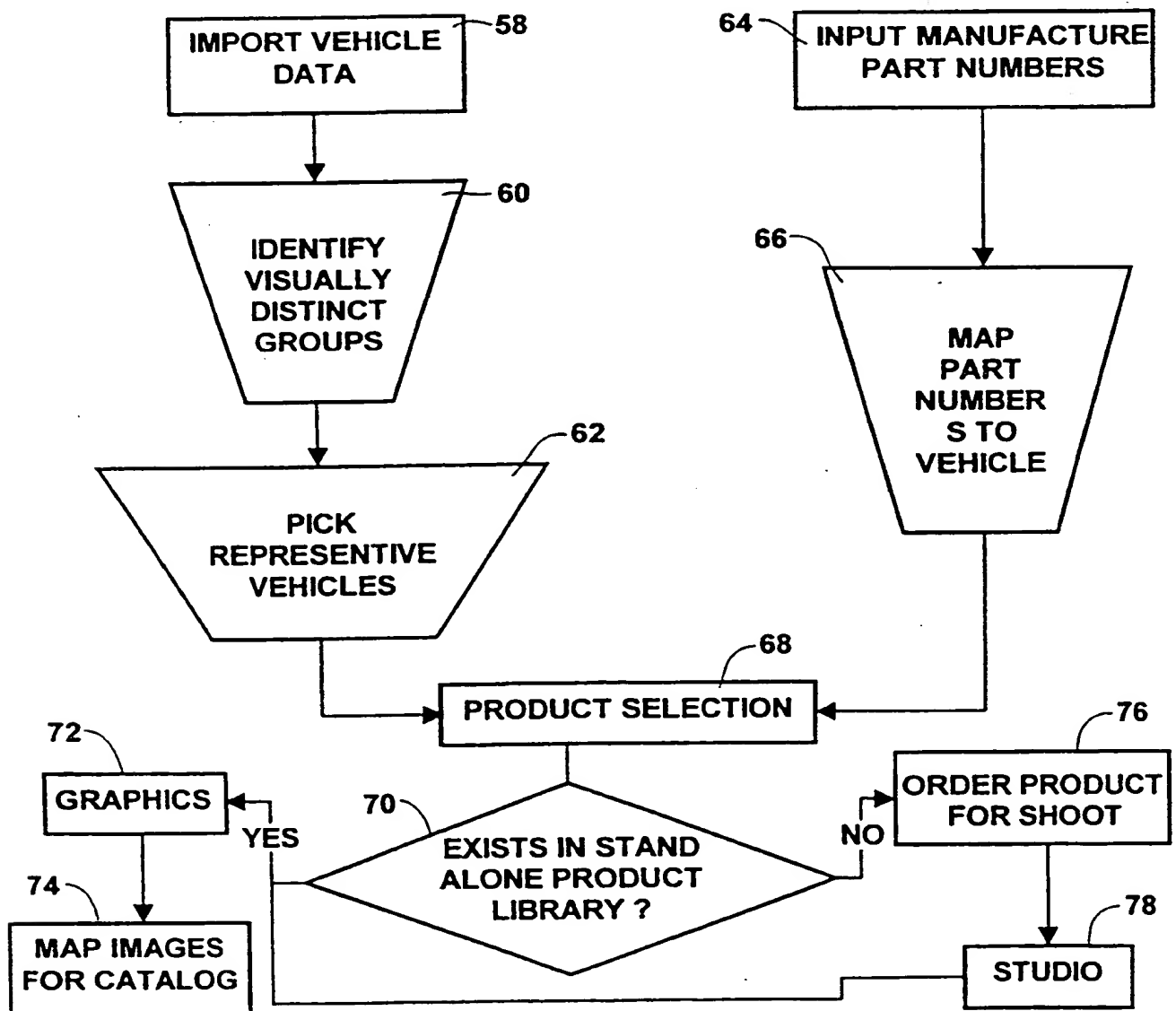
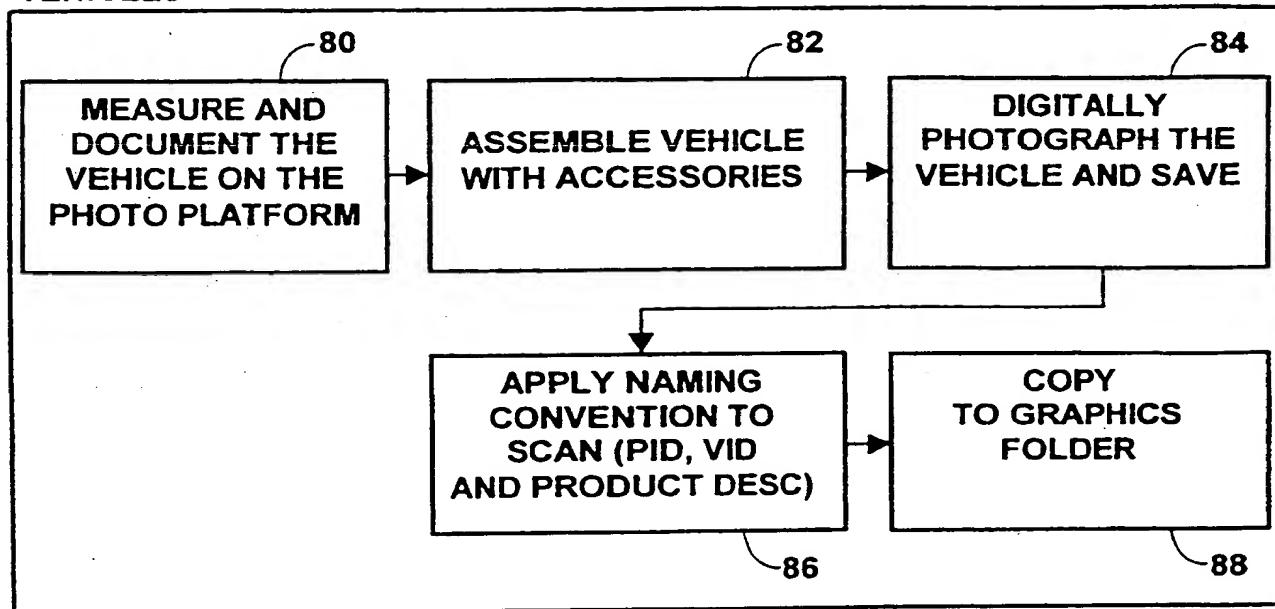


FIG. 3 - INTERACTIVE VEHICLE PROCESS OVERALL FLOW



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VEHICLES



ACCESSORIES

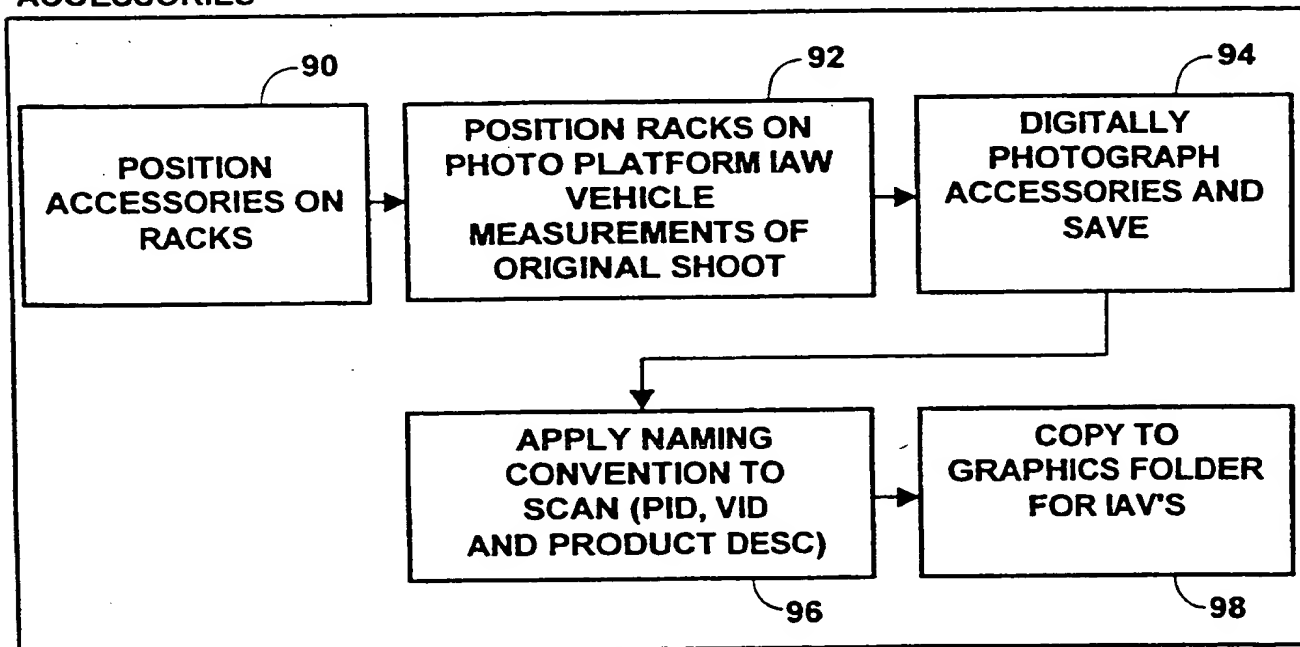
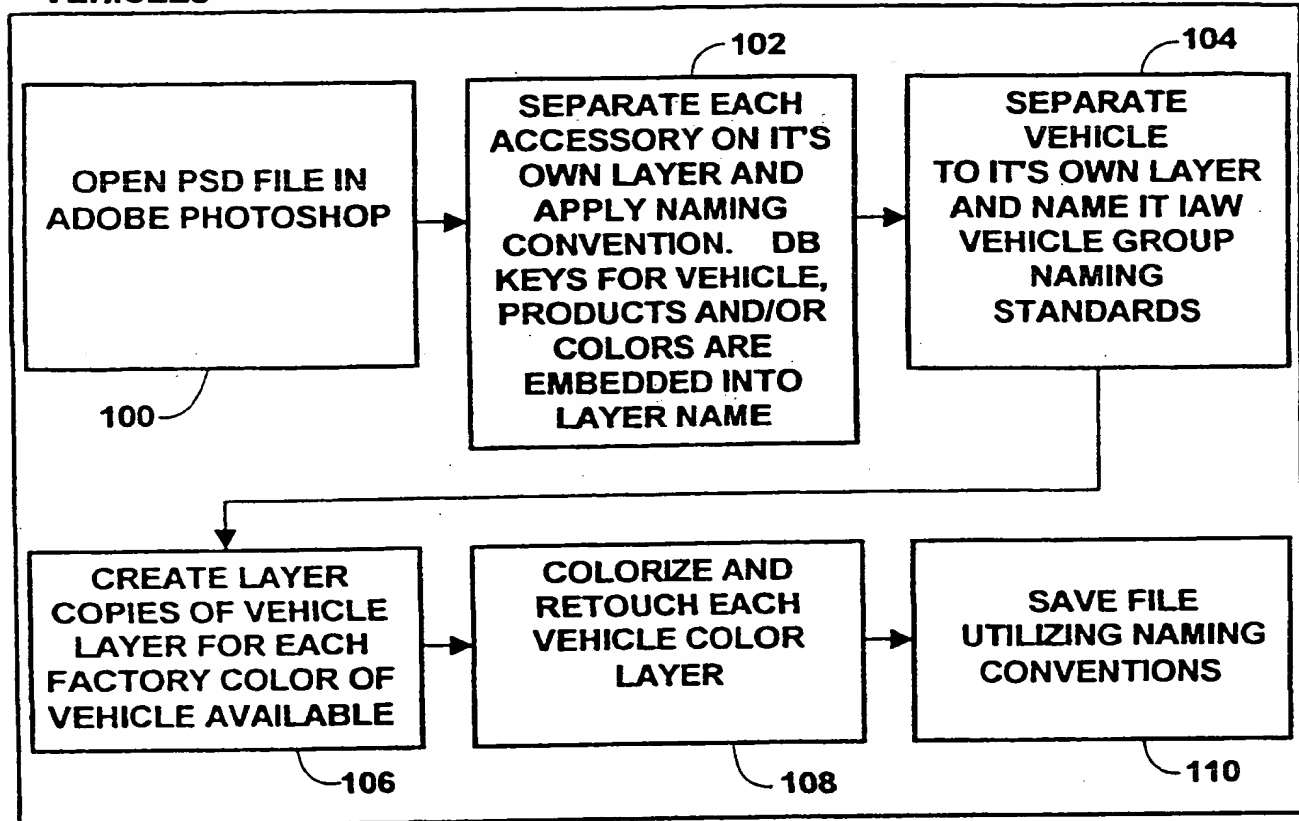


FIG. 5 - ASSEMBLE AND SHOOT PHASE

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VEHICLES



ACCESSORIES

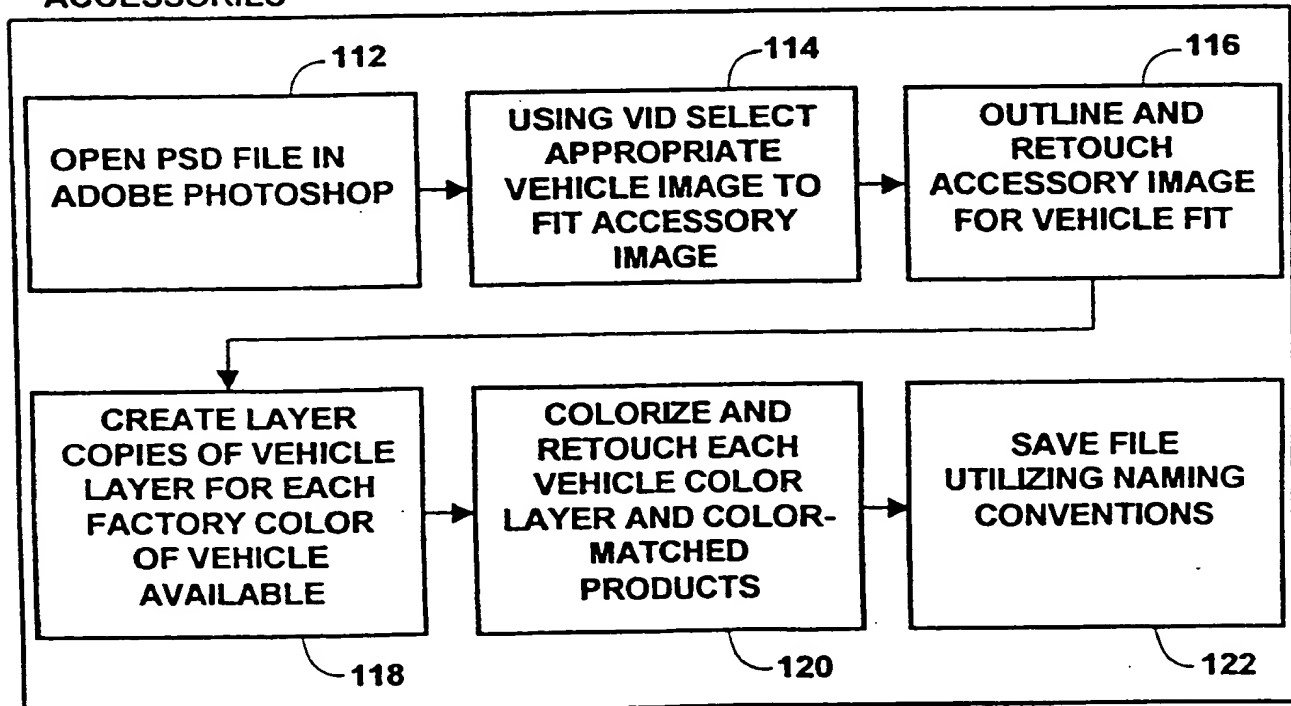


FIG. 6 - PHOTO MANIPULATION PHASE

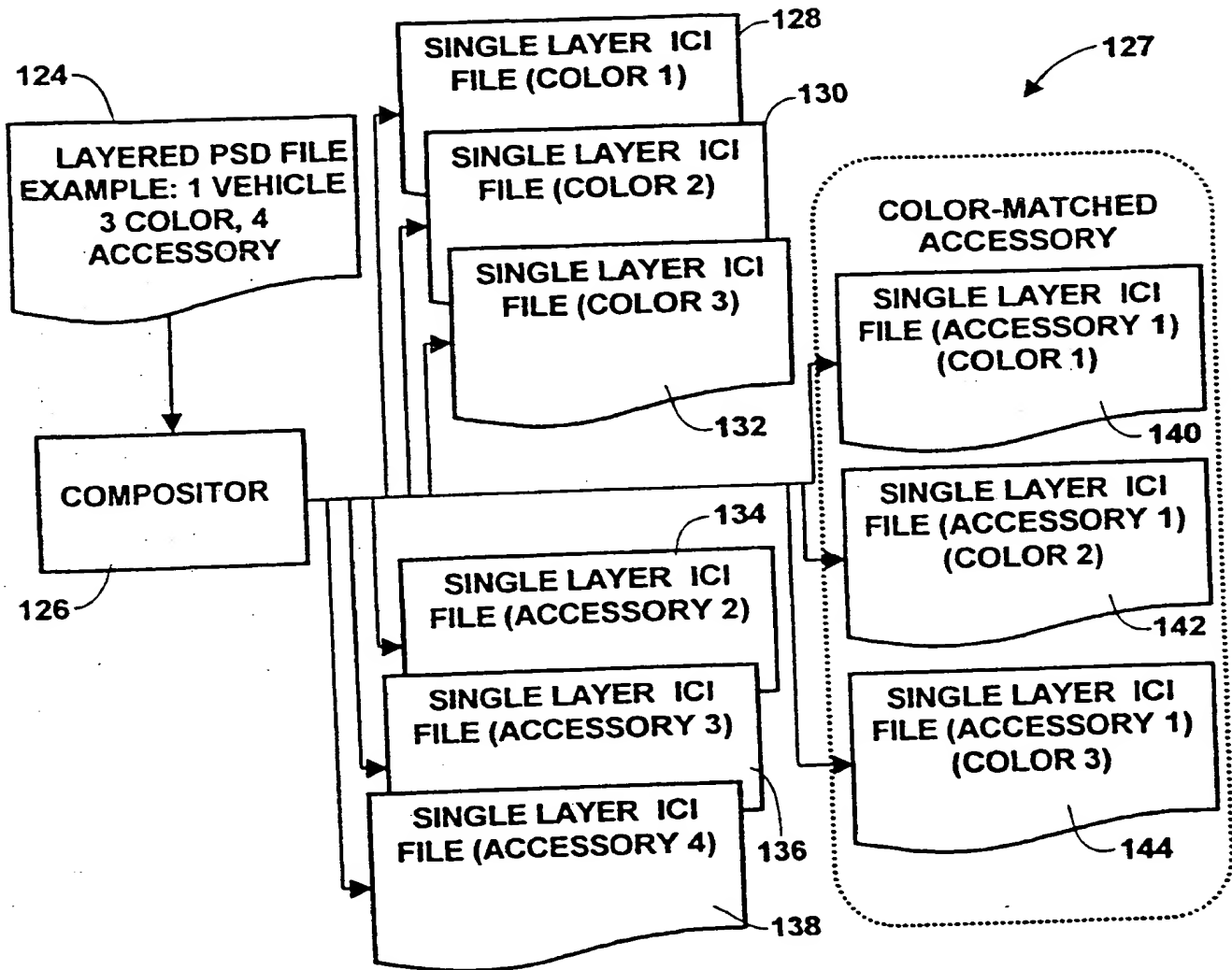
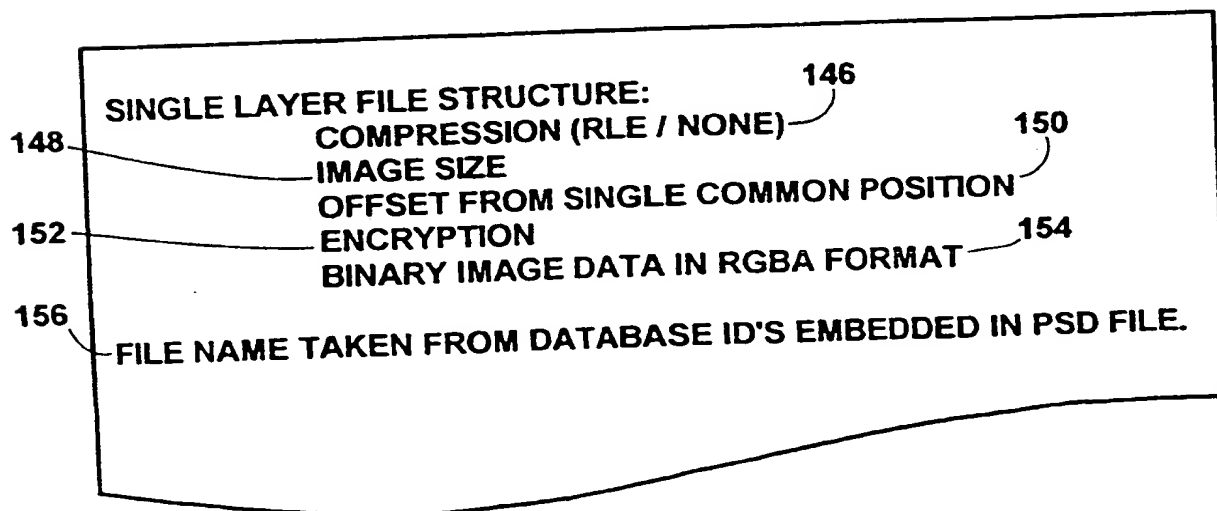


FIG. 7 - COMPOSITOR PHASE INTERNET SYSTEM



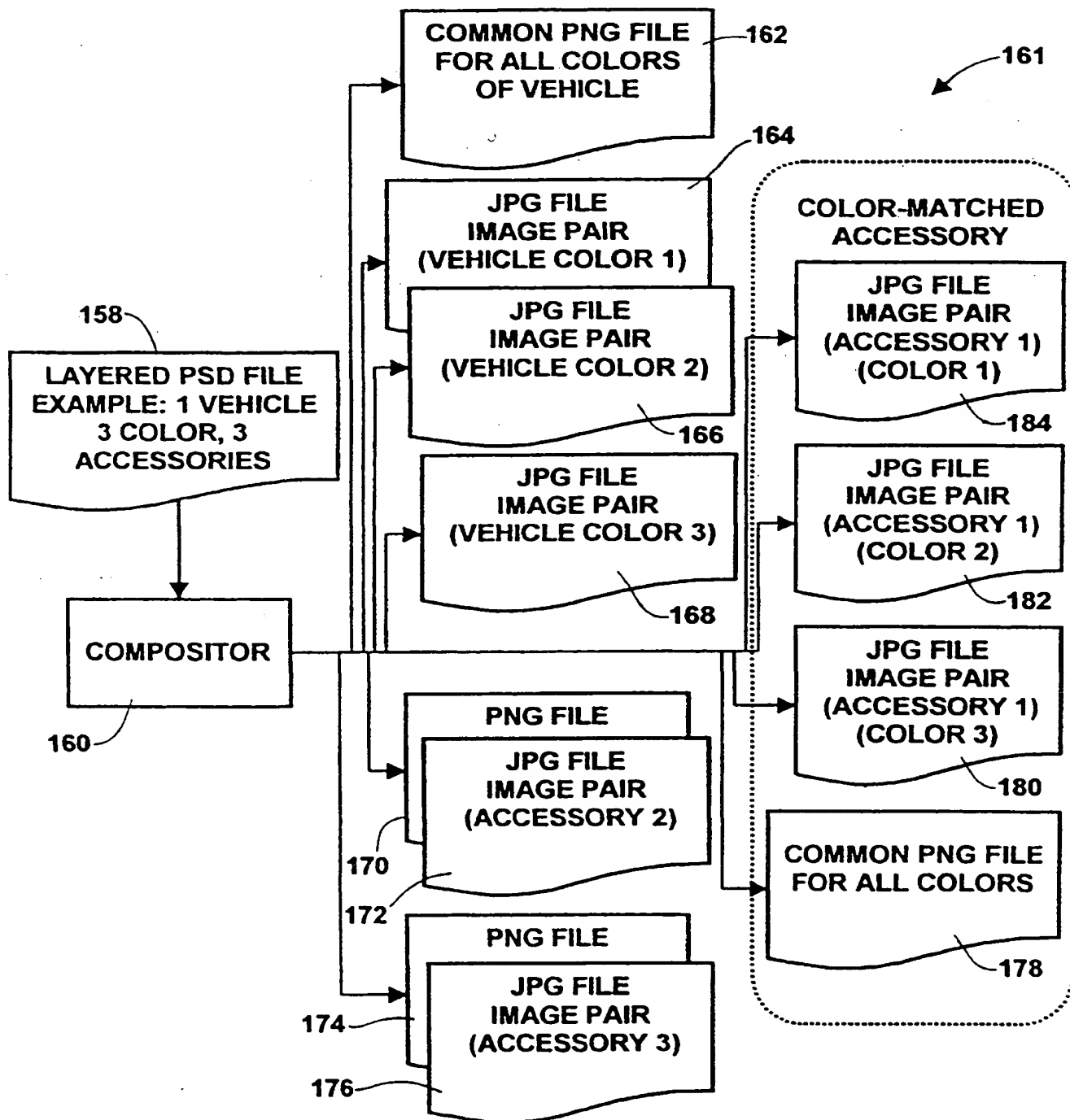


FIG. 9 - COMPOSITOR PHASE - DEALERSHIP SYSTEM

PNG FILE - FILE CONTAINING OPACITY, POSITIONAL
DATA AND TRANSPARENCY DATA.

JPG FILE - FILE CONTAINING RGB IMAGES INFORMATION

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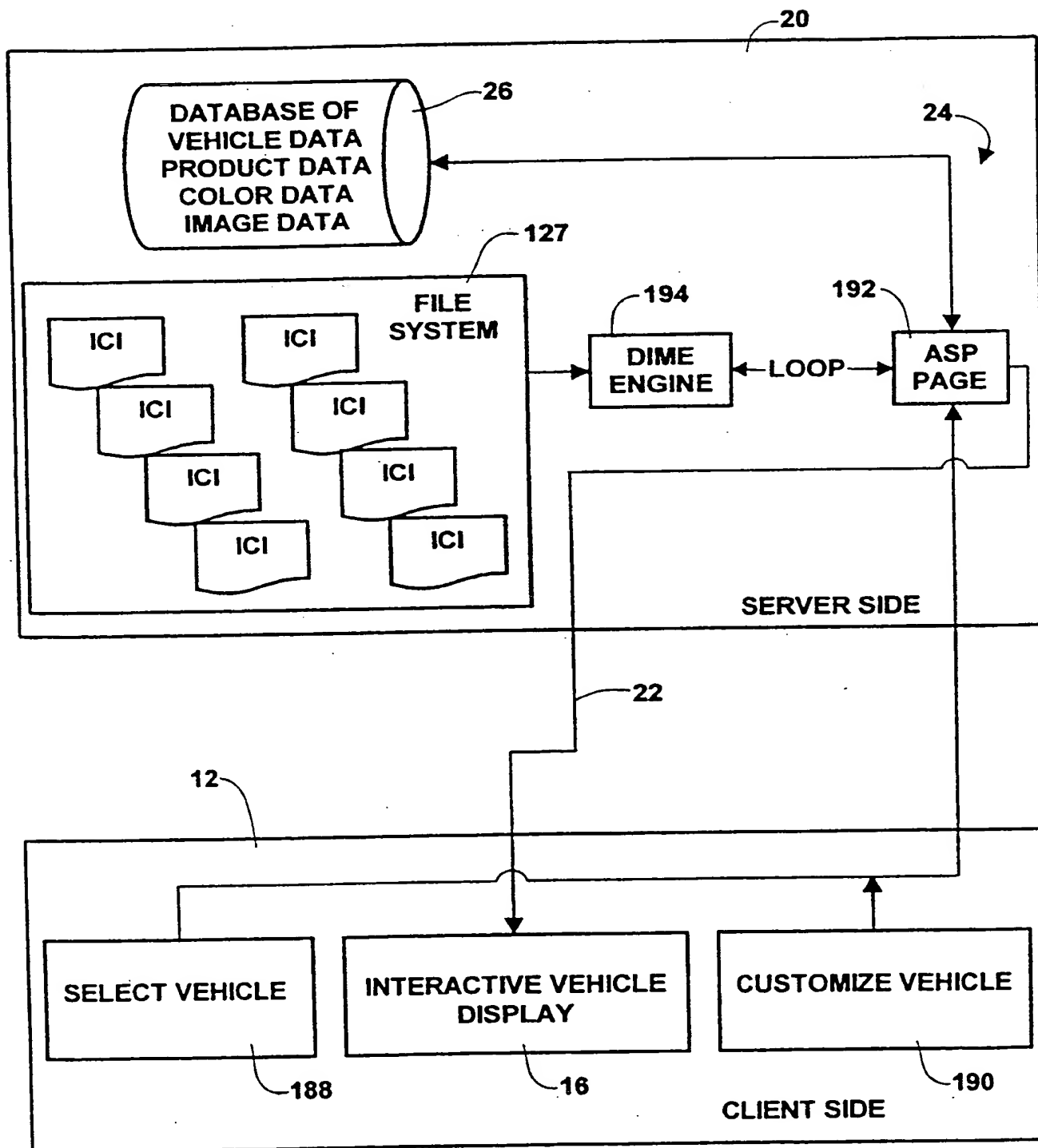


FIG. 11 - USE PHASE INTERNET SYSTEM

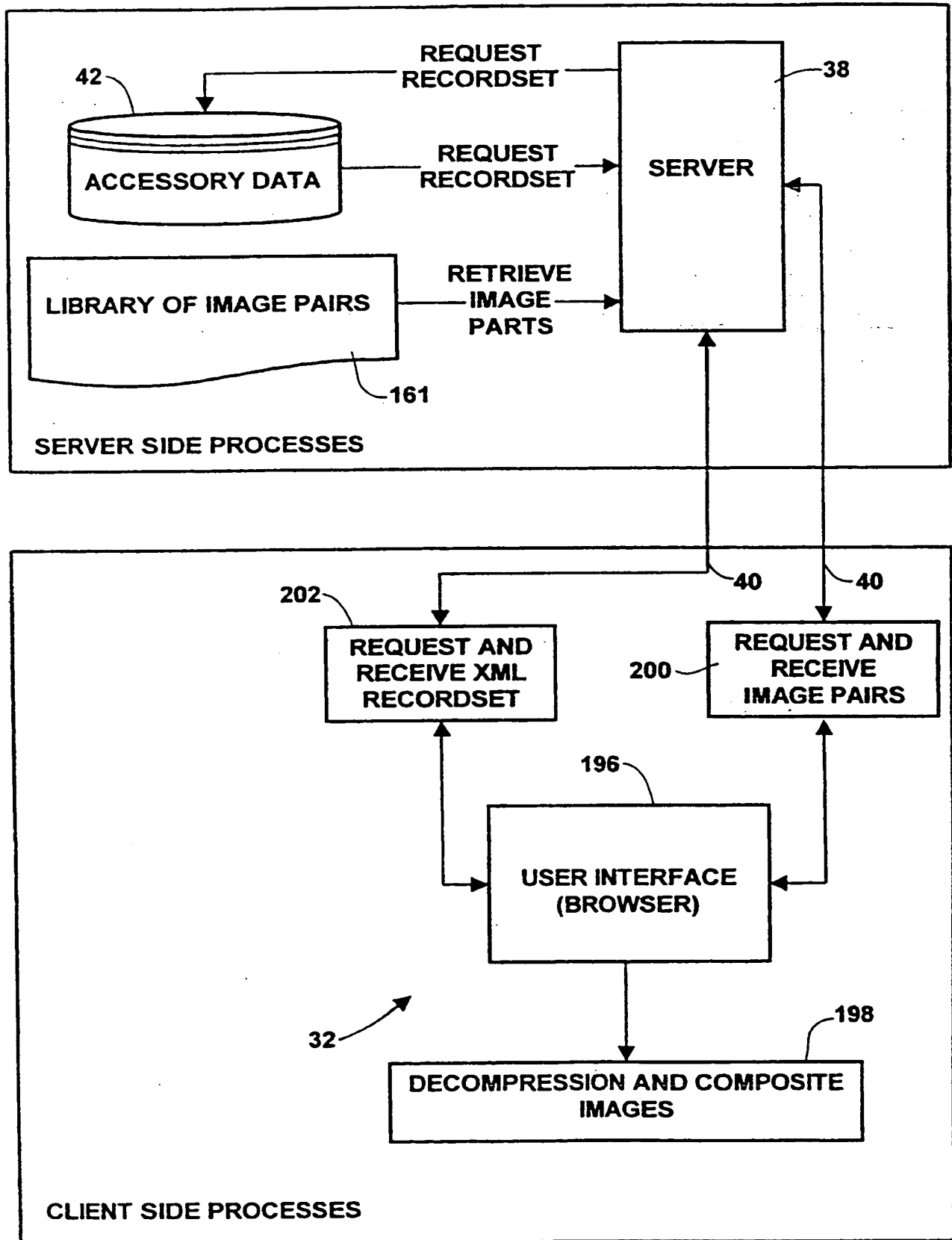


FIG. 12 - USE PHASE DEALERSHIP SYSTEM

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/21398

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/30, 17/60; G06T 11/60; G06G 7/70

US CL : 345/435, 113; 705/26, 27; 703/8

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 345/435, 113, 320; 705/26, 27; 703/8;

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Contacted Tire Rack, Inc.; Softwheels; Visual Reality

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim N
Y	MAVRIGAN, M. Custom Wheel Software. April 1997. Vol. 78, No. 5. pages 39-41 (reprinted), especially paragraphs 7-22.	1-31
Y	DRUSHAL, D. Computer Shopping for Custom Wheels. Modern Tire Dealer. February 1996. Vol. 77, No. 2, pages 32-34 (reprinted), especially paragraphs 12-36.	1-31
Y	DAVIS, J. Get the Picture: New Tool Allows Sales People to Show the Wheel Customer Something Tangible. Tire Review. January 1995, page 26, especially Figure, page 28, column 1.	3,13,19,25
Y	EP 669,600 A2 (TAKEGUCHI et al.) 30 August 1995, Figures, column 26, lines 10-15.	1-31

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or prior date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

15 NOVEMBER 2000

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/21398

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 583,030 A2 (JEFFERSON et al.) 16 February 1994.	1-31
A	EP 696,004 A1 (KOBARA et al.) 07 February 1996.	1-31
A	US 5,680,528 A (KORSZUN) 21 October 1997.	1-31
A	US 6,083,267 A (MOTOMAYA et al.) 04 July 2000.	1-31
X,P	KISIEL, R. Customized Cars a Click Away. Tire Business. 17 July 2000, Vol. 18, No. 9, page 6, especially page 6.	1-31
A	DAVIS, J. Newest Software is a Wizard. Tire Review. November 1997, page 30.	1-31
A	STROM, D. Web Wars: Which are the Most Valuable Weapons? Datamation. April 1997. Vol. 43, No. 4, pages 56-60.	1-31
A	HARRIS, Donna. N.J. Store Spins a Web Winner. Automotive News. 08 February 1999. page 26.	1-31

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/21398

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

EAST (US PATENTS) DIALOG: USPATFUL PCT JAPIO EPO WPI INSPEC COMPENDEX JICST NTIS
PASCAL SCISEARCH WILSON SCI BUS WIRE CMP SAN JOSE MERCURY MICRO COMP SOFTBASE
AERO/ DEFENSE JRL OF COM TRIS ABI/INFORM BUS&IND BUS WEEK BUS WIRE GALE COMP
MCGRAW HILL PR NEWS GALE NEWS GALE NEW PROD PROMPT GALE TRADE&IND WORLD REP
CONF PAP DISS ABS GLOBALBASE INS CONF INTERNET&PERS COMP AERO FINC TIMES NY TIMES
WALL STREET JRL SOFTBASE (AND OTHER FILES VIA DIALOG)

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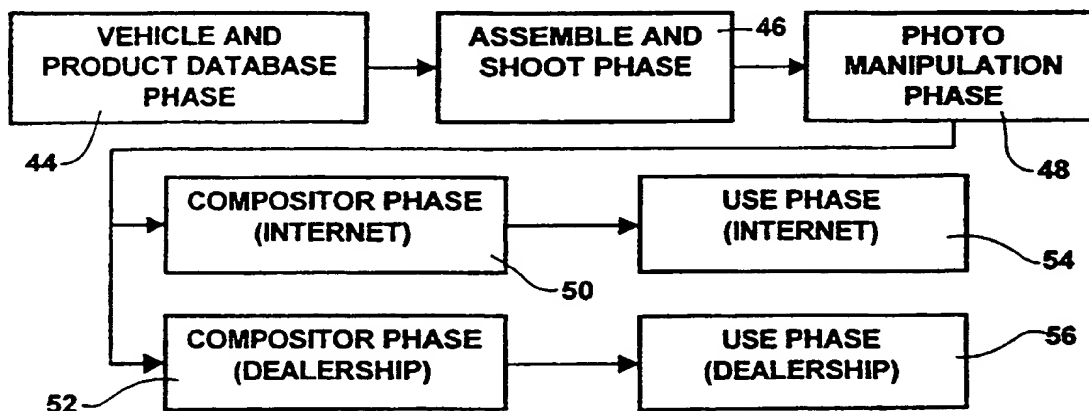
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HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
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CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: COMPUTERIZED VISUALIZING OF VEHICLES WITH CUSTOM ACCESSORIES



INTERACTIVE VEHICLE PROCESS OVERALL FLOW

(57) Abstract: A visualization system for enabling a user to select a vehicle and to overlay images of various user-selected accessories (50 and 52) onto an image of a vehicle to display an image of the desired combination includes a database (44) that stores digitized images of various vehicles and accessories. The accessories can be photographed separately (46) so that it is not necessary to photograph an accessorized vehicle for each one of the potentially thousands of vehicle/accessory combinations. The database (44) correlates accessories and colors, with prices and other data to the vehicles. An user can access the database over the Internet to select a vehicle with user-defined accessories, and then a composite image of the vehicle with accessories is presented (54). Or, a salesperson in a dealership can access a local database of vehicles/accessories to display, on a monitor in the showroom, a composite photograph of a vehicle with a buyer-defined suite of accessories (54), such that the buyer can visualize the desired vehicle/accessory combination even if an actual vehicle with the accessory suite is not on the lot.



WO 01/11500 A1



Published:

- with international search report
- with amended claims and statement

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Date of publication of the amended claims and statement:

23 August 2001

AMENDED CLAIMS

[received by the International Bureau on 27 February 2001 (27.02.01);
original claims 1-5, 7, 10, 12, 17, 18, 20, 23, 28, 29 and 31 amended;
new claims 32-44 added; remaining claims unchanged (9 pages)]

1. A method for visualizing a selected vehicle or an accessory combination, comprising the acts of:

photographing at least one vehicle to render a vehicle photograph;
photographing one or more accessories already mounted on a vehicle with a similar body type as the selected vehicle to render an accessory photograph for each of the one or more accessories, at least one of the one or more accessories being intended for use on the selected vehicle;

digitally storing the photographs;
accessing the digitally stored photographs; and
in response to a user-defined accessory combination, superimposing each intended accessory photograph onto the vehicle photograph on a computer display.

2. The method of Claim 1, further comprising the act of selecting a color from a database of colors associated with the selected vehicle, and causing the vehicle photograph to be characterized by the color.

3. The method of Claim 2, further comprising the act of rendering plural digital photographs of respective accessories, all being associated with the selected vehicle.

4. The method of Claim 3, wherein the number of different kinds of accessories is greater than eight.

5. A method for visualizing a vehicle or an accessory combination, comprising the acts of:

photographing at least one vehicle to render a vehicle photograph;
photographing one or more accessories separately from the vehicle to render each accessory photograph, the one or more accessories each being intended for use on at least the vehicle and being positioned on a rack in a position on the rack corresponding to the intended position of the one or more accessories on the vehicle;

digitally storing the photographs;
accessing the digitally stored photographs; and
in response to a user-defined accessory combination, superimposing each

accessory.

6. The method of Claim 1, further comprising making the digitally stored
5 photographs available on a wide area computer network, whereby a computer communicating
with the network can undertake the superimposing act.

7. The method of Claim 1, further comprising making the digitally stored
10 photographs available on a local area computer network of a vehicle dealer, wherein the user-
defined accessory combination is defined by a potential buyer and communicated to a seller,
such that the seller can communicate with the local area network and present the selected
vehicle with the one or more accessories on a computer display located at the vehicle dealer.

8. The method of Claim 5, further comprising the act of correlating at least one
15 vehicle coordinate to a location on a photograph area, such that the accessory is positioned on
the rack in accordance with the correlating act.

9. The method of Claim 1, wherein each photograph is associated with at least
20 one vehicle identification.

10. A computer-implemented method for promoting the selling of a vehicle or an
accessory combination, comprising the acts of:

receiving, from a buyer at a vehicle dealership, a user-defined accessory
combination including at least one vehicle, at least one color thereof, and one or more
25 accessories related thereto, the one or more accessories each being selected from a group of
accessories numbering greater than eight different kinds and related to the vehicle;

accessing a database located at the vehicle dealership to retrieve therefrom
digital photographs representative of the vehicle and the one or more accessories;

causing each photograph of the one or more accessories to be presented on a
30 computer display located at the vehicle dealership; and

causing the photograph of the vehicle to be presented on the computer display
along with each photograph of the one or more accessories, to promote a sale of the vehicle
with the one or more accessories.

11. The method of Claim 10, further comprising the acts of:
photographing the vehicle to render a vehicle photograph;
photographing at least one accessory separately from the vehicle to render an
accessory photograph; and
digitally storing the photographs in the database located at the dealership.

12. The method of Claim 11, further comprising the act of selecting a color from a
database of colors associate with the vehicle, and causing the vehicle photograph to be
characterized by the color.

13. The method of Claim 12, further comprising the act of rendering plural digital
photographs of respective accessories, all being associated with the vehicle.

14. The method of Claim 13, further comprising the act of positioning the
accessory on a rack in a position on the rack corresponding to the intended position of the
accessory on the vehicle, prior to photographing the accessory.

15. The method of Claim 14, further comprising the act of correlating at least one
vehicle coordinate to a location on a photograph area, such that the accessory is positioned on
the rack in accordance with the correlating act.

16. The method of Claim 10, wherein each photograph is associated with at least
one vehicle identification.

17. A computer-implemented method for permitting a user of a wide area
computer network to visualize a vehicle having a user-defined accessory combination,
comprising the acts of:

storing digital photographs as a file in a file system or other database
accessible to the user via the wide area network, the photographs including at least one
vehicle photograph and one or more accessory photographs, the photographs being associated
with at least one respective vehicle identification;

layering each digital photograph file into layers, each layer corresponding to
an available color of at least one vehicle or one or more accessories;

coloring each layer corresponding to the corresponding available color of the at least one vehicle or the one or more accessories;

saving each colored layer as at least one vehicle file or as one or more accessory files in the file system or other database;

receiving the user-defined accessory combination at a computer associated with the database; and

in response to the user-defined accessory combination, superimposing each accessory photograph stored in the one or more accessory files onto the vehicle photograph stored in the at least one vehicle file such that a display of the vehicle with the one or more accessories can be presented on a monitor of the user.

18. The method of Claim 17, further comprising the act of selecting a color from a database of colors associated with the vehicle, and causing the vehicle photograph to be characterized by the color.

19. The method of Claim 17, further comprising the act of rendering plural digital photographs of respective accessories, all being associated with the vehicle.

20. The method of Claim 17, wherein the number of different kinds of accessories is greater than eight.

21. The method of Claim 17, further comprising the act of positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on a vehicle, prior to photographing the accessory.

22. The method of Claim 21, further comprising the act of correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

23. A computer program device comprising:
a computer program storage device readable by a digital processing apparatus;
and
a program means on the program storage device and including instructions

executable by the digital processing apparatus for performing method acts for promoting the selling a vehicle or an accessory combination, the method acts comprising:

receiving, from a buyer at a vehicle dealership, a user-defined accessory combination including at least one vehicle, at least one color thereof, and one or more accessories related thereto, the one or more accessories each being selected from a group of accessories numbering greater than eight different kinds and related to the vehicle;

accessing a database located at the vehicle dealership to retrieve therefrom digital photographs representative of the vehicle and the one or more accessories;

causing each photograph of the one or more accessories to be presented on a computer display located at the vehicle dealership; and

causing the photograph of the vehicle to be presented on the computer display along with each photograph of the one or more accessories.

24. The computer program product of Claim 23, wherein the method acts further comprise:

photographing the vehicle to render a vehicle photograph;

photographing at least one accessory separately from the vehicle to render an accessory photograph; and

digitally storing the photographs in the database located at the dealership.

25. The computer program product of Claim 23, wherein the method acts further comprise rendering plural digital photographs of respective accessories, all being associated with the vehicle, the accessory being selected from a group of accessories numbering greater than eight and related to the vehicle.

26. The computer program product of Claim 23, wherein the method acts further comprise positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on the vehicle, prior to photographing the accessory.

27. The computer program product of Claim 26, wherein the method acts further comprise correlating at least one vehicle coordinate to a location on a photograph area, such that the accessory is positioned on the rack in accordance with the correlating act.

28. A computer program device comprising:

a computer program storage device readable by a digital processing apparatus;

and

a program means on the program storage device and including instructions executable by the digital processing apparatus for performing method acts for permitting a user of a wide area computer network to visualize a vehicle having a user-defined accessory combination, the method acts comprising:

storing digital photographs as a file in a file system or other database accessible to the user via the wide area network, the photographs including at least one vehicle photograph and one or more accessory photographs, the photographs being associated with at least one respective vehicle identification;

layering each digital photograph file into layers, each layer corresponding to an available color of at least one vehicle or one or more accessories;

coloring each layer corresponding to the corresponding available color of the at least one vehicle or the one or more accessories;

saving each colored layer as at least one vehicle file or as one or more accessory files in the file system or other database;

receiving the user-defined accessory combination at a computer associated with the database; and

in response to the user-defined accessory combination, superimposing each accessory photograph stored in the one or more accessory files onto the vehicle photograph stored in the at least one vehicle file such that a display of the vehicle with the one or more accessories can be presented on a monitor of the user.

29. The computer product of Claim 28, wherein the method acts further comprise rendering plural digital photographs of respective accessories, all being associated with the vehicle, wherein the number of different kinds of accessories is greater than eight.

30. The computer program product of Claim 28, wherein the method acts further comprise:

positioning the accessory on a rack in a position on the rack corresponding to the intended position of the accessory on a vehicle, prior to photographing the accessory; and correlating at least one vehicle coordinate to a location on a photograph area,

such that the accessory is positioned on the rack in accordance with the correlating act.

31. The computer program product of Claim 23, in combination with a computer system.

32. The computer program product of Claim 28, in combination with a computer system.

33. The method according to claim 1, further comprising the acts of:
digitally separating, from the vehicle with the similar body type, an image of each of the one or more accessories.

34. The method according to claim 33, wherein the act of digitally storing the photographs include the act of digitally storing each image of the one or more digitally separated accessories.

35. A method for visualizing a particular vehicle or an accessory combination, comprising the acts of:

importing information relating to a plurality of vehicles;

partitioning the vehicles into model groups, the vehicles in a particular model group having a similar body type;

photographing at least one vehicle from the model group that includes the particular vehicle to render a vehicle photograph;

photographing one or more accessories separately from the vehicle to render each accessory photograph, the one or more accessories being intended for use on at least the particular vehicle;

digitally storing the photographs;

accessing the digitally stored photographs; and

in response to a user-defined accessory combination, superimposing each accessory photograph onto the vehicle photograph on a computer display, whereby the accessory combination can be visualized.

36. A method for visualizing a vehicle or an accessory combination, comprising the acts of:

importing information for a plurality of vehicles including information related to at least one of a make, a model, a body type and a color;

partitioning the vehicles into model groups, the vehicles in a particular model group having a similar body type;

selecting a representative vehicle for each model group;

photographing the representative vehicle for each model group; and

digitally storing an image of the photographed representative vehicle for each model group.

37. The method according to claim 36, wherein the act of photographing includes the act of photographing only the representative vehicle for each model group.

38. The method according to claim 36, further comprising the acts of:
photographing the representative vehicle in a first color; and
creating, without further photographing the representative vehicle, a plurality of digital images of the representative vehicle in a plurality of colors other than the first color.

39. The method according to claim 36, further comprising the acts of:
importing information for a plurality of accessories, the accessories including a plurality of kinds of accessories; and
mapping each accessory to each corresponding vehicle according to the body type.

40. The method according to claim 39,
wherein the imported information includes manufacturer part numbers, and
wherein the act of mapping includes the act of correlating a particular manufacturer part number of a particular accessory with the imported information of corresponding vehicles.

41. A method for visualizing a vehicle, comprising the acts of:
photographing a vehicle with a suite of accessories for each body style;

digitally storing an image of the photographed vehicle with the suite of accessories for each body style;

digitally separating an image of each of the accessories from the image of the photographed vehicle; and

digitally storing each of the separated images of each accessory into an image file.

42. The method according to claim 41, further comprising the act of:

digitally storing the image of the photographed vehicle separated from the suite of accessories.

43. The method according to claim 42, further comprising the acts of:

importing information relating to color options with respect to the photographed vehicle;

creating a copy for each respective color options of the image of the photographed vehicle separated from the suite of accessories;

digitally coloring the copy of the image of the photographed vehicle separated from the suite of accessories according to the respective color option; and

digitally storing each copy of the image of the colored vehicle separated from the suite of accessories.

44. A method for visualizing a vehicle or an accessory combination, comprising the acts of:

photographing at least one vehicle to render a vehicle photograph;

photographing a plurality of different kinds of accessories separately from the vehicle to render an accessory photograph for each of the accessories, the one or more accessories being intended for use on at least the vehicle;

digitally storing the photographs;

accessing the digitally stored photographs; and

in response to a user-defined accessory combination, superimposing each accessory photograph of at least two different kinds of accessories onto the vehicle photograph on a computer display, whereby the accessory combination can be visualized.

Statement Under PCT Article 19 (1)

Some claims have been amended and 12 claims have been added 4 of which are independent claims. The amendments do not go beyond the disclosure of the international application as originally filed.